**MIDDLE EAST TECHNICAL UNIVERSITY**

**ELECTRICAL AND ELECTRONICS ENGINEERING DEPARTMENT**



**EE463 STATIC POWER CONVERSION-I**

**PROJECT #2 REPORT**

**Due Date: 16.12.2018**

**Team Members**

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**INTRODUCTION**

**Question 1-)**

**Part a-)**

1. Fully Controlled

To calculate firing angle, we need a formula and we know that formula from courses.

(1)

Where Vs = 230 Vrms, w = 2f, f = 50, Hz, Ls = 0.5 mH and Id = 40 A.

We know above values but we do not know Vd and α. To find Vd, we can write voltage equation and that is

(2)

We know that average voltage of inductor in a period is zero. Then, Vd is equal to VR and Vd is 40\*4 = 160 V.

When we use equation 1, we find α as 41 degree. For that angle, average current is 37.8 A.

**Part b-)**

1. Fully Controlled

We found the THD is %43.65.

